REMARKS

Favorable reconsideration is respectfully solicited.

Claims 1-12 remain active in the application.

The claims have been revised for clarity and responsive to the objections found in the outstanding Office Action. With respect to the rejection under 35 U.S.C. § 112, the Examiner's specific objections, and Applicants' responses thereto, are set forth below:

With regard to claims 1 and 11, there is no antecedent basis for "the inner periphery" (line 4), "the inlet" (claim 1, line 17; claim 11, lines 9 and 10), and "the outlet" (claim 11, line 14).

Claims 1 and 11 now recite "an inner periphery" and "an inlet."

With regard to claim 1, the determination of the path of material is critical to the understanding of the invention, but there is not enough structure to understand the flow of the material at all.

Claim 1 now recites that the crush material is "sequentially crushed in first, second and third regions of the" crushing chamber.

With regard to claims 1 and 11, the structure of the "a stationary concave liner" in line 2 is not clear and unnecessarily confusing. The stationary liner according to Figure 1 is not concave. Therefore, the word "concave" is misleading.

The concavity of the liner 2 is clear from the claims and is supported in the specification. It is also apparent from Figure 1 which shows that the liner 2 forms a concavity within which is positioned the liner 3.

With regard to claims 1 and 11, the inner periphery of the concave liner in line 4 is not understood because there is no structural description of the stationary liner.

The stationary liner is recited in line 2 of Claims 1 and 11.

With regard to claims 1 and 11, it is not clear as to how a crushing chamber is formed between the stationary liner and the mantle liner because there is no structure at all given to the stationary liner and the mantle liner.

Claims 1 and 11 now recite that the mantle liner is fixed to the mounting base "and positioned relative to said concave liner to form a crushing chamber therebetween."

With regard to claim 1, it is not clear how a first area surface in line 9 has a length T or T multiplied by a square root of 2. How does an area have a predetermined length?

The "first area surface" is a surface. A surface has dimensions in different directions. Claim 1 now clarifies that the first area surface has a length of T to $\sqrt{2}T$ "in the direction of movement of the crush material from an inlet of said crushing chamber to an outlet thereof."

With regard to claim 1, it is not clear how a first tapered surface (line 19) has a length, and how a second tapered surface (line 23) has a length.

Claim 1 now clarifies that a length of a perpendicular from said first area surface to the first tapered surface at the inlet side of said first region (e.g., length L1) is greater than T. Basis for this is found at page 3, lines 18-21 and for the length L1 on page 12, lines 11-14.

With regard to claim 1, the phrases, "to form a first area" (line 10), "to form a second area" (line 13), and "to form a third area" (line 15) are not understood. Does this mean that the first area is equal to the first area surface?

The first through third "areas" have been changed to "regions."

With regard to claim 1, the phrases, "a second area surface extending inclining outward" (line 12), and "a third area surface extending inclining further outward" (line 14) are totally not understood. It is not understood which element the second or third area surface is extending from. The words, "inclining" and "outward," are relative terms and are not understood.

The claims have been amended to delete "inclining" and "outward."

With regard to claim 1, the phrase, "a third tapered surface having an inclination angle of 45 to 50 degrees," is not clear. It is not understood which surface the inclination is compared to.

Claim 1 now recites that the inclination is with respect to the horizontal plane, as in Claim 11.

With regard to claim 1, the phrase "of a" in lines 19 and 23 are not understood.

This phrase has been deleted.

With regard to claim 11, the phrase, "to the horizontal plane" (lines 10 and 15) is not understood because there is no relationship defined between the cone crusher and the horizontal plane.

The claims now recite a substantially vertical axis, as shown in Fig. 1.

With regard to claim 11, it is not clear how the first area, the second area, and the third area are defined.

The first through third "areas" have been changed to "regions."

With regard to claim 11, there is no antecedent basis for "the crushing surface" in lines 9, 13, and 18.

Claim 11 now recites "a crushing surface."

With regard to claims 3-6, it is not clear how an area has a length.

The direction of the length of the claimed area "surface" is now defined.

According to a feature of the invention as set forth in Claim 1, the cone crusher is configured to reduce uneven abrasion and increase the throughput of products. To this end, and referring to the non-limiting embodiment for ease of reference and not as a limitation, the length of a perpendicular L1 between a first tapered surface 3a of the mantle liner 3 and the first area surface 2a of the concave liner 2, at the inlet side of the first region 11 in which the material is crushed, is greater than "T". Crush material having a charging raw material size of T can therefore be inserted thereinto (page 3, lines 18-21). Moreover, since the length of the first area surface 2a of the concave liner 2 is up to about the square root of 2 times T, the first area surface has a length suitable for receiving the crush material as a single particle (page 3, lines 22-24). Moreover, since a cross angle between the first tapered surface 3a and the first area surface 2a is less than 20°, the crushed material may be well received by the first tapered surface together with the first area surface (page 3, lines 24-27). Additionally, since the inclination angle of the first tapered surface 3a with respect to the horizontal is greater than 60 °, the crushed material may be securely transferred to the next stage (page 3, lines 27-29). Hence, each particle in the crushed material may be received directly by the concave liner and the mantle liner, and a proper crushing due to the single particle compression

resulting from a press force between the liners can be carried out (see paragraph bridging pages 3-4).

The second area or region 12 has characteristics such that the crush material which has been crushed in the first area is stacked between the concave liner 2 and the mantle liner 3, when these liners are away from each other, and further when changing from the separation state to the approach state, a reduction in the space factor between the particles in the crush material provides multiple particle contact, thereby making it possible to crush the crush material on the basis of the particle layer compression, where the crushing starts at contact portions between particles (page 4, lines 15-23).

In the third area or region 13, the crush material may be discharged at an optimal final traveling speed. As a result, the crush material may be discharged as a high quality product from the outlet of the crushing chamber and a greater amount of the crush material may be discharged without clogging up due to a reduced spacing between particles in the crush material (paragraph bridging pages 4-5).

Claims 1-12 were rejected under 35 U.S.C. § 102 as being anticipated by U.S. patent 6,581,860 (Savolainen). The Examiner there stated that "many different angles can be found in the first crushing head...and the second crushing head." **Applicants respectfully submit that the Examiner has not set forth a *prima facie* case of anticipation of Claims 1-12 by Savolainen.** As noted above, Claim 1 recites a specific numerical length for the first area surface, a specific numerical length of the perpendicular between the first area surface and the first tapered surface, a specific cross angle between the first area surface and the first tapered surface, as well as a specific inclination angle relative to the horizontal. Additionally, as noted above, these specific numerical limitations provide improved results as set forth in the specification. *The Examiner has not alleged that Savolainen discloses any of the claimed numerical parameters* but has instead merely stated that "many different angles can be

found" in the reference. Indeed, Savolainen has no teaching for any of the numerical parameters set forth above and so does not anticipate Claim 1. Similarly, Savolainen provides no motivation for those skilled in the art to adopt the numerical parameters set forth in Claim 1 and would not have rendered Claim 1 obvious to those skilled in the art.

Similarly, with respect to Claim 11, the Examiner has not alleged that Savolainen discloses the specific numerical limitation of the angle of the mantle liner in the first region with respect to the horizontal plane, or the 15 to 20 ° angle between the crushing surface of the concave liner and the mantle liner in the first region,, nor has the Examiner alleged that Sovolainen teaches the claimed parameters of the second region or third region. Accordingly, no *prima facie* case of anticipation has been set forth. Additionally, since Savolainen provides no teaching or suggestion for the improved results derived from these numerical parameters (see page 7, line 18 through page 8, line 22), it would not have rendered Claim 11 obvious to those skilled in the art. The claims therefore clearly define over this reference.

Applicants therefore believe that the present application is in condition for allowance and respectfully solicits an early notice of allowability.

Respectfully submitted,

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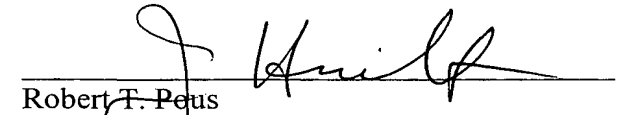

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